USAGE REPORT

Vehicle:	SRBC TEST	**Date:**	06/03/2026
Location:	Valence	**Missions:**	1

Mission 1

Trial date	2026-03-06
Location	Valence, Drome, France
Operator	Alexandre
Start time	09:40
End time	10:06
Weather	
Precipitation type	None
Temperature	16 °C
Sun position	Levé
Terrain	
Slope	2 %
Cross slope	2 %
Soil	
Texture	Clay loam
Dominant particle size	Blocks >200 mm
Moisture condition	Very wet (plastic)
Crop	
Growth stage	Soil preparation
Weed pressure	100 %
Planned operation	Soil preparation
Adjacent environment	
Tall vegetation	Yes
Tall buildings	No
Metallic structures	Yes
Ditch or embankment	No
High voltage lines	No
Roads	No

No network zone	No
Robot configuration	
Robot weight	280 kg
Robot width	0.64 m
Tool	
Tool name	Cheval de trait
Tool type	Trailed
Tool weight	50 kg
Tool length	1.4 m
Tool width	0.6 m
Tool height	1.0 m
Working depth	0.1 m

Figure 1.1: Mission presentation photo

Mission presentation

Mission parameters	
Task to perform	Binage
Working speed	1 km/h
Organization	
Workforce	
Total number of employees	2
Employees on robot task	0
Surface	
Theoretical surface of the plot	0.03 ha
Plot fragmentation	Consolidated (<0.5 km)

Agronomic Summary

Energy per hectare	16.54 kWh/ha
Work rate	0.02 ha/h
Autonomy per battery	0.15 ha/batterie

Time tracking

Tool setup	5 min
GPS connection wait	0 min
Wi-Fi connection wait	0 min
Supervision time	30 min
Travel time	30 min
Restart count	0
Stop count	0

Work assessment

Quality assessment	Neutral
Crop damage	None

Performance Indicators

Agronomic [1]

Indicateur	Valeur	Unité
Crop species	*N/A*	
Growth stage	Soil preparation	
Soil texture	Clay loam	
Soil moisture	Very wet (plastic)	
Weed pressure	100	%
Planned operation	Soil preparation	
Work quality assessment	Neutral	
Crop damage	None	

Energy [2]

Indicateur	Valeur	Unité
SOC at start	72.20	%
SOC at end	68.50	%
Total discharge [3] *For a battery pack capacity of: 2.54 kWh*	3.90	%

Indicateur	Valeur	Unité
Total energy consumed	0.10	kWh
Average power	0.33	kW
Energy per hectare	16.54	kWh/ha
Autonomy per battery *Reference battery: 2.54 kWh*	0.15	ha/batterie

Work Rate [4]

Indicateur	Valeur	Unité
Work rate [5]	0.02	ha/h
Area covered [6]	0.01	ha
Worked plot surface [7]	N/A	ha
Worked area [8]	N/A	ha
Effective area [9]	N/A	ha
Coverage rate [10]	N/A	%
Average speed (km/h)	1.01	km/h
Max speed (km/h)	1.50	km/h

Economic [11]

Indicateur	Valeur	Unité
Electricity price	N/A	€/kWh
Labor cost per hour	N/A	€/h
Employees assigned	0	
Labor cost per hectare	N/A	€/ha
Energy cost	N/A	€
Energy cost per hectare	N/A	€/ha
Total cost *Prix de l'électricité non disponible dans le COD*	N/A	€
Total cost per hectare	N/A	€/ha

Environmental [12]

Indicateur	Valeur	Unité
Temperature	16	°C
Precipitation type	None	

Indicateur	Valeur	Unité
CO_2 emissions [13] *Emission factor applied: 317 g CO_2 per kWh.*	0.03	kg
Plot fragmentation	Consolidated (<0.5 km)	

Mission [14]

Indicateur	Valeur	Unité
Planned distance [15]	*N/A*	m
Performed distance [16]	93.61	m
Distance deviation	*N/A*	m
Performed distance (%)	*N/A*	%
Mean lateral deviation *Without half-turn*	*N/A*	cm
Max lateral deviation *Without half-turn*	*N/A*	cm
Mean lateral deviation (tool) *Without half-turn, tool distance: — cm*	*N/A*	cm
Max lateral deviation (tool) *Without half-turn, tool distance: — cm*	*N/A*	cm
Worked rows [17]	*N/A*	

Operational [18]

Indicateur	Valeur	Unité
Robot weight	280.00	kg
Tool weight	*N/A*	kg
Total weight	280.00	kg
Energy per kg per hectare	0.06	kWh/kg/ha
Mean torque at work (% of nominal) [19] *Reference nominal torque: 2.39 N·m — Number of motors: —.*	*N/A*	%

Safety [20]

Indicateur	Valeur	Unité
Geofencing exits	1	
Time outside geofencing (seconds)	392.00	s
Time outside geofencing (hours)	0.11	h
Local emergency stops	0	
Remote emergency stops	0	

Indicateur	Valeur	Unité
Bumper activations	0	

Reliability [21]

Indicateur	Valeur	Unité
Output errors	0	
Input errors	0	
Battery errors	0	
Motor errors	0	
Cylinder errors	0	
Total errors	0	
Output error time (seconds)	0.00	s
Input error time (seconds)	0.00	s
Battery error time (seconds)	0.00	s
Motor error time (seconds)	0.00	s
Cylinder error time (seconds)	0.00	s
Total error time (seconds)	0.00	s
Error rate per hour	0.00	/h
System availability	100.00	%

Localization [22]

Indicateur	Valeur	Unité
Localization errors	1	
Error time (seconds)	680.87	s
Error time (hours)	0.19	h

Time [23]

Indicateur	Valeur	Unité
Total duration	1075.89	s
Total duration (hours)	0.30	h
Active time	525.84	s
Active time (hours)	0.15	h
Inactive time	550.05	s
Inactive time (hours)	0.15	h
Active time (%)	48.88	%

Indicateur	Valeur	Unité
Inactive time (%)	**51.12**	%

Descriptions of indicators

Bracketed numbers refer to definitions, assumptions and sources listed below.

[1] Agronomic indicator: value from the recorded crop trial context.

[2] Energy indicator: derived from electrical measurements, consumption and SOC logged during the mission.

[3] Total discharge (%): energy consumed during the mission (change in cumulative energy, in kWh) divided by nominal battery pack capacity (kWh), multiplied by 100. This indicator does not use start or end SOC; reference pack capacity is stated in the note when known.

[4] Work-rate indicator: derived from worked areas, speeds and time on field.

[5] Work rate: amount of work completed per unit of time, in ha/h. Hourly rate = area covered (ha) ÷ total mission duration (h).

[6] Area covered: this is the area swept by the robot = cumulative odometric distance × robot width.

[7] Worked plot surface: area of the plot worked by the robot. It is modeled as an oriented bounding box (OBB) with a margin equal to half the robot width around the planned trajectory that was worked.

[8] Worked area: area processed by the implement (tool width × path length with implement lowered). Each pass counts; overlaps add up.

[9] Effective area: area worked by the implement excluding overlaps.

[10] Coverage rate: ratio of worked area to effective area. (worked area − effective area) / effective area × 100. A high value indicates many passes over the same zones.

[11] Economic indicator: computed from cost settings and mission energy/time aggregates.

[12] Environmental indicator: derived from weather context or consumption using the documented method.

[13] CO_2 emissions from grid electricity consumed during the mission (kWh × 0.317 kg/kWh). Source: French Ministry for Ecological Transition — Key Climate Figures (digital edition), chapter on GHG emissions from industry / electricity production (statistiques.developpement-durable.gouv.fr).

[14] Mission indicator: derived from actual path, plan and computed geometric deviations.

[15] Theoretical mission distance: cumulative length of the planned trajectory from the mission JSON file. Does not match the robot's actual path.

[16] Distance actually traveled by the robot. May include movement before the mission effectively starts and after it ends, depending on the recorded data.

[17] Number of distinct rows worked (tool lowered).

[18] Operational indicator: derived from kinematics, implement data or documented masses.

[19] Mean absolute motor torque only when the tool is lowered, as a percentage of the motors' nominal torque.

[20] Safety indicator: derived from safety-related events and durations.

[21] Reliability indicator: derived from fault codes and error time per subsystem.

[22] Localization indicator: derived from localization faults or downtime during the mission.

[23] Time indicator: derived from timestamps and activity states during the mission.